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Intelligence Report

Warsaw Pact Air Power:

Forces for Use in Central Europe

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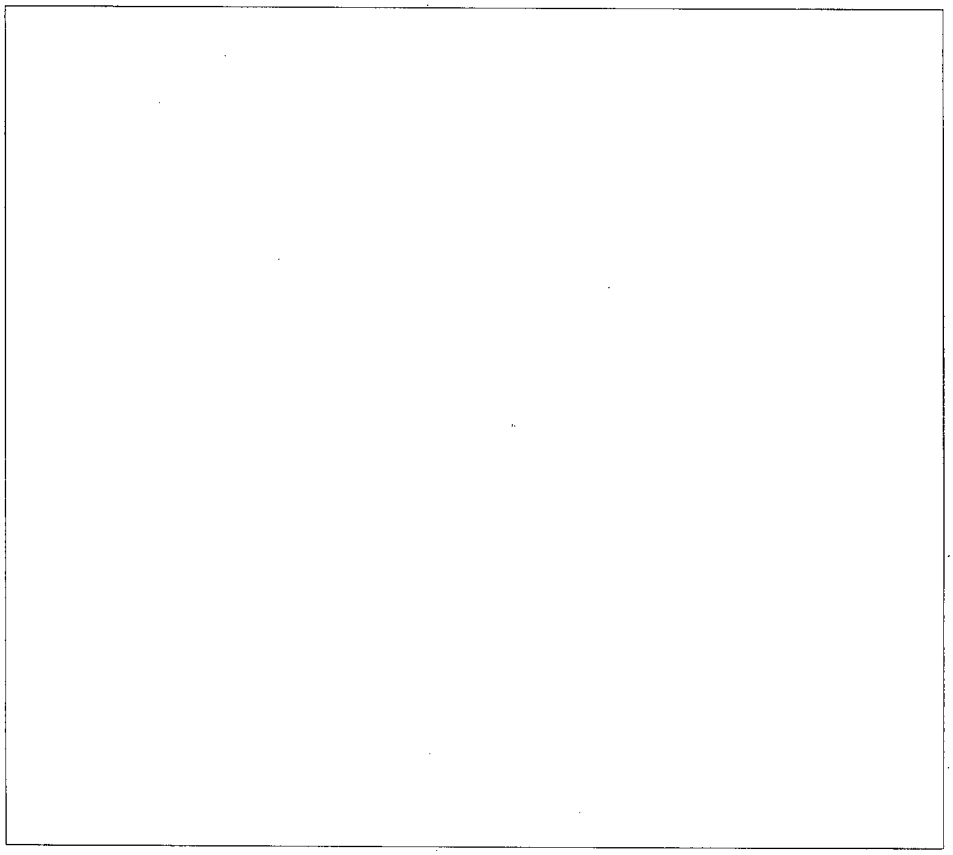

December 1973

Warsaw Pact Air Power: Forces for Use in Central Europe

The Soviets apparently are developing a tactical air force with nuclear and conventional attack capabilities similar to those of the US tactical air forces.

Until recently Warsaw Pact air forces reflected Soviet doctrine of the early Sixties which held that a war in Europe would begin with—or immediately escalate to the use of—nuclear weapons. Pact tactical air forces were designed primarily for air defense and for delivering nuclear strikes in conjunction with the strikes of strategic and tactical missiles. Consequently, the range and conventional payload capabilities of Pact tactical aircraft were—and for the most part still are—poor.

The change in Pact air forces is in response to a change in Soviet doctrine in the mid-Sixties. Because of the NATO acceptance of "flexible response," Soviet planners now consider that a war in Europe might begin with an indeterminate period of conventional war before escalating to a nuclear war.

They have therefore sought to increase the capabilities of their air forces to conduct conventional as well as nuclear attacks.

— Near-term efforts to improve conventional capabilities have included the deployment of new multimission aircraft or improved variants of existing types, increased training in the ground attack role, changes in operational doctrine to improve the capabilities of the present force, and the introduction of more sophisticated ground attack ordnance.

— The longer term effort will involve the continuing development and introduction of expensive new aircraft and ordnance, designed in the late Sixties, which have greatly improved conventional attack capabilities. Some of these aircraft and weapons will begin entering service in 1974.

Soviet achievement of tactical air parity would almost certainly force NATO planners to allocate a greater portion of their tactical air forces to air defense and counterair missions, at the expense of close air support and interdiction missions. Moreover, a weakening of the tactical air advantage currently enjoyed by NATO would undermine some trade-off options now available to Western powers at the MBFR negotiations.

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
December 1973

INTELLIGENCE REPORT

Warsaw Pact Air Power: Forces for Use in Central Europe

The Report in Brief

The current trend of improvements in Soviet "Frontal Aviation" could provide, within this decade, capabilities similar to those of the US tactical air forces. Recent developments in equipment and training--in response to a new doctrine which emerged in the mid-Sixties--portend a significant change in the character of Frontal Aviation.

Force Development. At present, Warsaw Pact air forces opposite the NATO Central Region consist of three distinct components: Frontal Aviation--the tactical air element of each front, responsible for providing direct air support for ground operations; USSR-based medium bombers--elements of Long Range Aviation responsible for air strikes against theater targets; and national air defense aviation--the air units of East Germany, Poland, and Czechoslovakia which provide territorial air defense. Each of these components has its own command structure, and since the mid-Fifties no separate headquarters for overall control of theater air activities has existed.

In the Fifties and through most of the Sixties the Soviets considered that a war with NATO in central Europe would be nuclear virtually from its outbreak. This view, and the related, dominant concern for de-

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veloping nuclear missile forces, inhibited the effort to develop the conventional attack capabilities of Pact air forces. But in the past five years or so the Soviets have achieved nuclear parity with the US, and NATO has developed a strategy of flexible response. These factors have led the Soviets to conclude that war in Europe would not necessarily involve the use of nuclear weapons from the outset and that hostilities might continue for some time with only conventional weapons.

As a result, the Pact has increased its planning, training, and acquisition of equipment to prepare the air forces for an increased offensive role in conventional warfare. In structure and weapons the Pact air forces continue to reflect the nuclear oriented policy of the late Fifties, but recent efforts to improve the forces and the development of new equipment for the Seventies point to increased capabilities for offensive air missions in conventional as well as nuclear war, without sacrifice of capabilities for either contingency. The development and deployment of new equipment will be a protracted process, however, because of the long production lead times and the costs involved.

Operational Plan. For the near term, the Pact has adopted a high-risk operational plan to enable the present air forces to gain theater air superiority at the outset of a conflict in Central Europe. Called the "Air Operation," the plan involves the immediate commitment of the bulk of the Pact theater air forces to mass attacks on NATO airfields to limit NATO's use of air power during the conventional phase and to reduce its capabilities for tactical nuclear war.

This plan, reflecting the greater responsibilities of the air forces in conventional war, has caused the Soviets to reexamine their concept of air forces command and control. For this operation, the Frontal Aviation and medium bomber forces opposite the NATO Central Region would be controlled by a single theater-level headquarters and not by the various front commanders and bomber commands to which they were subordinated in nuclear war planning.

This operational plan has several disadvantages stemming mainly from the performance shortcomings of the Pact aircraft. Chief among these are the requirement to use the medium bombers as the main striking force and the resultant requirement--because these bombers are more vulnerable to defenses--to use Frontal Aviation aircraft, including interceptors, to suppress NATO air defenses.

When new equipment being developed and deployed becomes operational in sufficient numbers, it will increase the capabilities of Pact air forces to carry out the Air Operation as it is now planned and, in time, to overcome some of its deficiencies. Frontal Aviation is being upgraded, for example, as aircraft now available with improved ground attack capabilities--late-model MIG-21 Fishbed fighters and MIG-23 Flogger fighters and fighter-bombers--enter service. Increased ground attack training in air defense regiments which have been equipped with the newer MIG-21s is also intended to improve the multimission capabilities of Frontal Aviation.

In a conventional war, the higher sortie rates required to offset the small payload capacities of Pact tactical aircraft probably would increase the use of main operating bases above that planned for nuclear war. Operations from dispersal fields--particularly those with sod runways--reduce sortie rates. Moreover, aircraft are less vulnerable to conventional attack at the sheltered, heavily defended main operating bases. Dispersal fields probably would be used for forward refueling and rearming during the conventional stage and for their original purpose--dispersion--if a NATO nuclear attack appeared imminent.

Advanced Equipment. The longer range solution to the problems imposed by conventional warfare is dependent on the introduction in significant numbers of new aircraft and sophisticated ordnance. Two new aircraft--the Fencer, a fighter-bomber similar to the US F-111, and the Backfire, a larger, swing-wing medium bomber--have entered production. These aircraft have low-altitude penetration capabilities which would enable them to avoid some NATO air defenses, mitigating in

part the requirement to destroy or suppress the defenses. As the two aircraft are relatively expensive and their capabilities may be similar, however, some difficult economic and jurisdictional decisions may be required to establish how many of each will be procured and to what service branches they will be assigned.

A new VTOL aircraft which appears to be suited for Frontal Aviation, is currently being tested. Testing thus far is naval-associated but the estimated characteristics of the aircraft indicate that it would provide a significant improvement in close air support capabilities. Budget constraints--the competition for funds with other aircraft programs and ground force systems which probably have a higher priority--could be the factor governing procurement of for Frontal Aviation.

Impact on NATO Planning. A nuclear-capable Frontal Aviation force with significantly improved conventional capabilities would have a far-reaching impact on NATO. NATO planners would almost certainly have to change current allocation priorities for the tactical air forces if faced with comparably equipped Pact air forces. Rather than committing the bulk of the NATO tactical air forces to blunt the Pact ground attack as is presently advocated by some, NATO planners might be forced at least initially to allocate a greater proportion of the air resources to air defense and counterair efforts to prevent Pact attainment of air superiority. In present NATO planning, attacks on Pact air bases are held less urgent than air efforts against the ground offensive. If Frontal Aviation had a significantly improved capability to inflict damage on NATO forces, the value of such air action would have to be reevaluated.

The achievement of tactical air parity, or the potential for it, would have an effect on MBFR negotiations as well. US "mixed package" options would be reduced, as it might appear less attractive to trade NATO tactical air capabilities for Pact tanks if these trades left NATO with a disadvantage in the air. Aircraft-for-aircraft options could also become more expensive for NATO negotiations than would be the case today, if Frontal Aviation aircraft had capabilities comparable to those of the US tactical air forces.

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The Present Forces

Warsaw Pact air forces opposite the NATO Central Region--those based in the Pact countries of the NATO "Guidelines Area" (East Germany, Poland, and Czechoslovakia) and in Hungary and the western USSR--consist of three distinct components:

-- Frontal Aviation--the tactical air element of each front, responsible for providing direct air support for ground operations

-- USSR-based medium bombers--elements of Long Range Aviation (LRA) responsible for air strikes against theater targets

-- national air defense aviation--the air units of East Germany, Poland, and Czechoslovakia which provide territorial air defense.

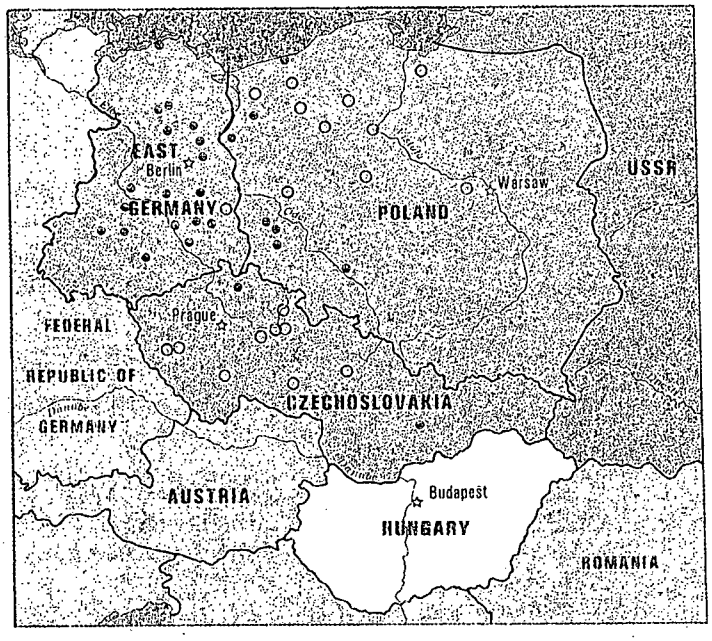
Each of these components has its own command structure, and since the mid-Fifties no separate headquarters for overall control of theater air activities has existed.

From the Fifties and through most of the Sixties, the Soviets conceived of war in central Europe as being nuclear virtually from its outbreak. This view, together with a dominant concern for developing nuclear missile forces, inhibited the effort to develop conventional attack capabilities for Pact air forces. But in the past five years or so the Soviets have achieved nuclear parity with the US, and NATO has evolved a strategy of flexible response. These factors have led the Soviets to conclude that war in Europe would not necessarily involve the use of nuclear weapons from the outset and that hostilities might continue for some time with only conventional weapons.

As a result, the Pact has increased its planning, training, and acquisition of equipment to prepare the air forces for an increased offensive role in conven-

Warsaw Pact Air Forces

in NATO Guidelines Area



Frontal Aviation regiment
Soviet ●
East European ○

NOTE: Figures in these tables do not include trainer aircraft.

NATO Guidelines Area

Soviet and East European Frontal Aviation	Soviet Groups of Forces				East European National Forces				Total Frontal Aviation
	East Germany	Poland	Czechoslovakia	Total	Polish	East German	Czechoslovak	Total	
Fighter	400	127	80	607	122		108	230	837
Fighter-bomber	252	120		372	208	40	153	401	773
Light bomber					30			30	30
Reconnaissance	150	60	15	225	85		80	165	390
Total	802	307	95	1,204	445	40	341	826	2,030
East European National Air Defense Aircraft					Polish	East German	Czechoslovak	Total	
Fighter					340	285	108	733	

Hungary

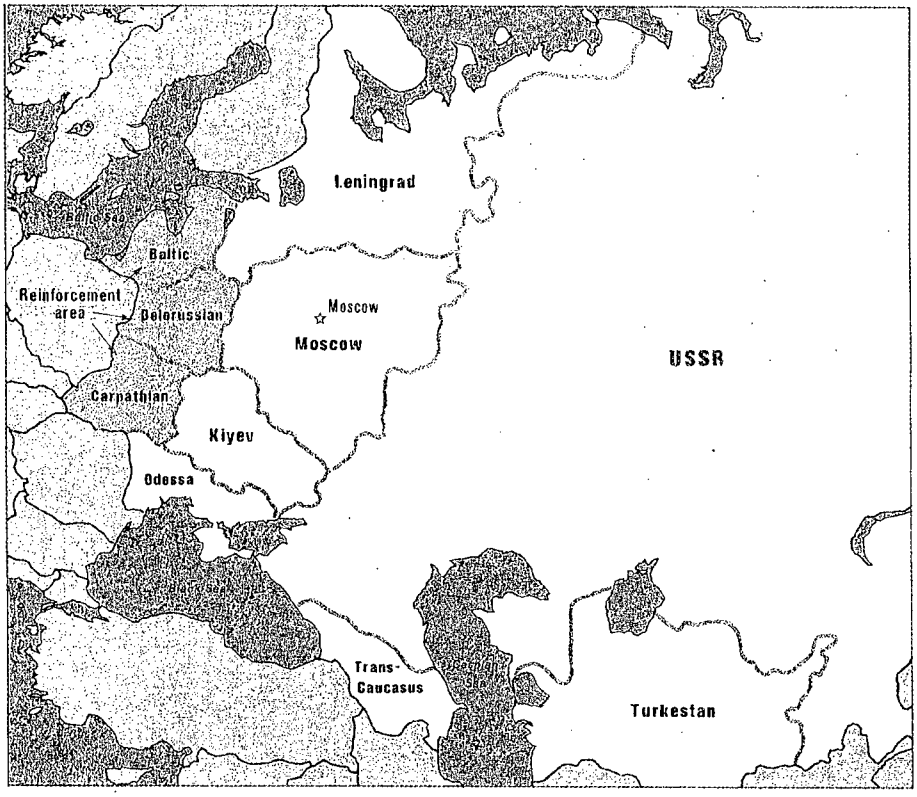
Soviet Frontal Aviation	
Fighter	120
Fighter-bomber	40
Light bomber	66
Reconnaissance	14
Total	240
Hungarian National Air Defense Aircraft	
Fighter	120

**This chart reflects the capabilities of the aircraft only. It does not consider factors such as unit training and mission responsibility.*

Frontal Aviation Nuclear-Capable Aircraft*

	NATO Guidelines Area			Hungary	USSR			Total
	Soviet	East European	Total	Soviet Group of Forces	Reinforcement area	Other western USSR	Total	
MIG-21	633	258	891	134	228	548	776	1,801
MIG-23	27		27		120	94	214	241
SU-7	180	108	288	40	80	146	226	554
IL-28		30	30	11	33	11	44	85
YAK-27/28				55	132	33	165	220
Total	840	396	1,236	240	593	832	1,425	2,901

in the Western USSR



Frontal Aviation Aircraft in Immediate Reinforcement Area	Military Districts			
	Baltic	Belorussian	Carpathian	Total
Fighter	80	120	120	320
Fighter-bomber	40	120	120	280
Light bomber	99		66	165
Reconnaissance	36	33	47	116
Total	255	273	353	881

Other Frontal Aviation in Western USSR	Military Districts						
	Leningrad	Moscow	Kiyev	Odessa	Trans-Caucasus	Turkestan	Total
Fighter		120	80	120	120	80	520
Fighter-bomber	80	40		40	80	40	280
Light bomber	11				33		44
Reconnaissance	47	61		73	73	14	268
Total	138	221	80	233	306	134	1,112

Medium Bombers in Western USSR	Bomber	ASM	Reconnaissance	Total
TU-16 Badger	154	200*	22	376
TU-22 Blinder	91	75	10	176
Total	245	275	32	552

* *Air-to-surface missile carriers that could be easily converted to free-fall bombers.*

tional warfare. Because of the time lag between the development of doctrine and the procurement of equipment, the structure and weapons of current Pact air forces continue to reflect the Soviet concept of the late Fifties. Over the longer term, however, the increased attention to conventional war is expected to bring major improvements in Pact air force attack capabilities. Some changes already are under way.

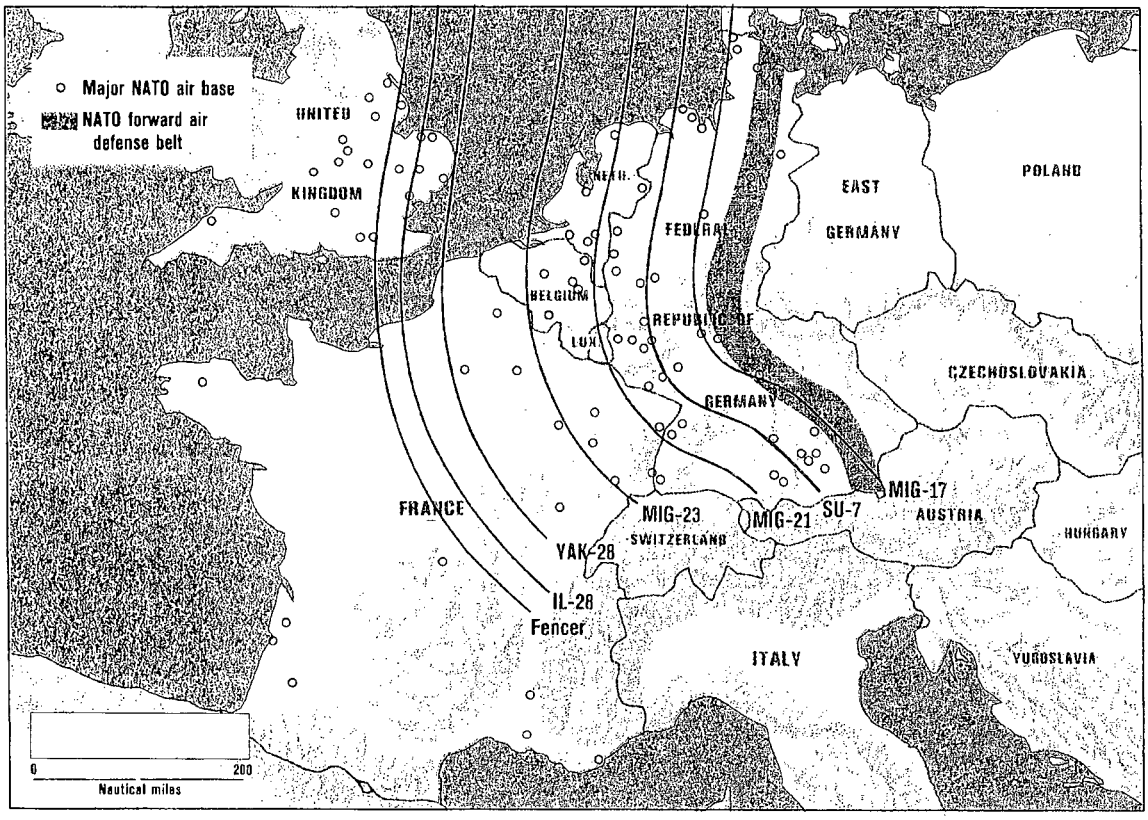
Frontal Aviation and Battlefield Air Support

Frontal Aviation comprises those air units which would be subordinate to individual front commanders in wartime. These forces are to provide close air support, battlefield air defense and interdiction, and reconnaissance within the operational zones of the front--generally out to about 165 nautical miles beyond the battle line.

These Frontal Aviation missions are similar to certain responsibilities of the US Tactical Air Command, but the similarity between the two forces ends here. In terms of command and control, missions, and equipment, US tactical air forces are configured for theater-level operations as well as missions in direct support of the ground forces. Frontal Aviation has not been intended, nor is it presently equipped or organized, for deep-strike missions in pursuit of theater-level objectives. These missions have been allocated to peripheral strike forces--missiles and medium bombers--based in the USSR. Frontal Aviation is given a supporting theater-level role in recent conventional war planning, however, to suppress air defenses threatening the medium bombers.

Organization. In Warsaw Pact practice, front headquarters as such do not exist except in wartime or in periods of tension. During peacetime, Soviet tactical air units are subordinate to the groups of forces maintained in Eastern Europe and to most of the military districts in the USSR, in the same manner as the ground forces. East European tactical

Operating Radii of Frontal Aviation Aircraft



Radius represents the distance over which the aircraft can operate, allowing for return to base. Radii shown are for Pact aircraft carrying the payloads represented on page 19, flying a low-low-high mission profile to minimize exposure to NATO air defenses. The radii represent distances from the East German and Czechoslovak borders; the actual operating radii of Pact aircraft would be reduced by the distance from their bases to the borders.

air units are subordinate to their respective national air force headquarters.

The air regiment is the basic Frontal Aviation organizational element, roughly paralleling in echelon the ground force division. Generally each regiment has three squadrons, although some light bomber regiments have a fourth squadron for reconnaissance.

The strength of the squadrons varies with the type of aircraft. Fighter and fighter-bomber squadrons have 12 aircraft, light bomber squadrons 10, and reconnaissance squadrons 12. Most regiments have additional aircraft on base which, during peacetime, are used for training, for administrative purposes, and as maintenance fillers. During wartime they would serve to replace combat losses. Including these extras, fighter and fighter-bomber units generally have about 40 combat aircraft each, plus four to nine trainers, most of which are combat capable. Units equipped with light bombers generally have 30 to 35 aircraft each, plus three or four combat-capable trainers.

Evidence [redacted] indicates that the prescribed squadron unit equipment levels form the basis for establishing requirements for POL, ordnance, spare parts, maintenance, and other logistic support. Readiness levels also are defined in terms of a percentage of unit equipment. Pact tactics and force requirements for various types of operations are calculated on standard-size units with the equipment levels noted above.

Some evidence over the past few years has suggested that the numbers of extra aircraft--above the unit equipment--at fighter and fighter-bomber bases in East Germany have been increased. [redacted]

It appears that Soviet fighter units in East Germany have as many as 45 combat aircraft and fighter-bomber units have up to 42.

Most Frontal Aviation bases in the forward area and the western USSR have aircraft shelters, however, ruling out a complete aircraft count [redacted] Aircraft shelters for tactical regiments have consistently been constructed in groups of 40 per regiment--presumably 36 for aircraft assigned to the squadrons and 4 for fighter aircraft in regimental reserve or combat-capable trainers. Photography of fields which do not have shelters does not reflect an increase in the number of aircraft normally found with regiments, but such airfields usually are not located in critical areas.

In nuclear war planning in the early-to-mid-Sixties, the Soviets probably reasoned that the greatest danger to tactical air regiments would be NATO nuclear strikes. In such strikes the bulk of the aircraft and support of a given regiment probably would be lost, and the entire regiment would be replaced. Current planning, however, is based on the premise that an indeterminate period of conventional war could precede nuclear warfare. If, in fact, additional aircraft have been provided to tactical air regiments, they probably are intended to enable the regiments to maintain effective strength during the more gradual attrition of conventional war.

For administrative purposes, fighter and fighter-bomber regiments are usually organized into divisions of three regiments each, while light bomber and reconnaissance squadrons or regiments normally are subordinate directly to the headquarters of a group of forces or military district.

Front air forces are formed by combining the air divisions and regiments of one or more peacetime air armies--as well as smaller transport, reconnaissance, and special purpose units--under a designated front headquarters. The tactical air strength of a given front would depend on the importance of its intended axis of advance and the forces arrayed opposite it. For example, the GSFG--estimated to be a potential

wartime front--has nine fighter regiments, six ground attack regiments, and various ECM and reconnaissance units.

The peacetime location and subordination of the tactical air armies do not necessarily indicate their wartime subordination. For example, aircraft in the Baltic Military District might not deploy with the ground forces there, but could move forward earlier to support the forward fronts or to take part in the initial air strikes. Moreover, aircraft of one front could be utilized to support the operations of another front or for theater-level missions such as the initial air assault.

Aircraft Capabilities. For the most part, Frontal Aviation ground attack aircraft are characterized by poor payload and short range--deficiencies attributable to the Soviet practice of adapting aircraft designed as interceptors in the Forties and Fifties to the fighter-bomber role in the Sixties and Seventies. *(Characteristics and capabilities of Pact and US aircraft are compared on pages 18-19.)*

-- The SU-7 Fitter is the most modern aircraft in fighter-bomber regiments in the forward area. This aircraft was designed in the Fifties as an interceptor, but was modified for duty with Frontal Aviation in the fighter-bomber role--primarily as a tactical nuclear weapons carrier. Numerous reports [redacted] have attested to this aircraft's instability at low altitudes and its poor range and payload capabilities.

-- The SU-17 Fitter B is a swing-wing version of the SU-7 which probably handles better at low altitudes than does the original version and may offer some increase in range and payload. The SU-17 could provide a significant improvement to Frontal Aviation capabilities only if it replaced older model fighter-bombers such as the MIG-17 on a one-for-one basis. Its limited appearance in operational units thus far suggests that it is a

stopgap that probably will never be deployed widely with Frontal Aviation.

-- The MIG-17 Fresco, with even poorer range and payload capabilities than the SU-7, continues to be the most numerous fighter-bomber in the forces opposite NATO. The shortcomings of these aircraft would be less significant, however, if they are employed, as is now apparently planned, primarily to suppress air defenses with rockets and cannon and to provide close air support. To do this they would operate from forward natural-surface airfields.

-- The IL-28 Beagle, at its optimum operating altitudes, has the best range and payload characteristics of currently available Frontal Aviation aircraft. These light bombers first entered service more than two decades ago, and their relatively slow speed makes them highly vulnerable to interceptors and ground-based air defenses. They probably have been retained because of their payload advantages over other Frontal Aviation aircraft in a conventional attack role. Nevertheless, fewer than 150 would be available for operations against the NATO Central Region and these probably would be limited in low-level operations by their advanced age.

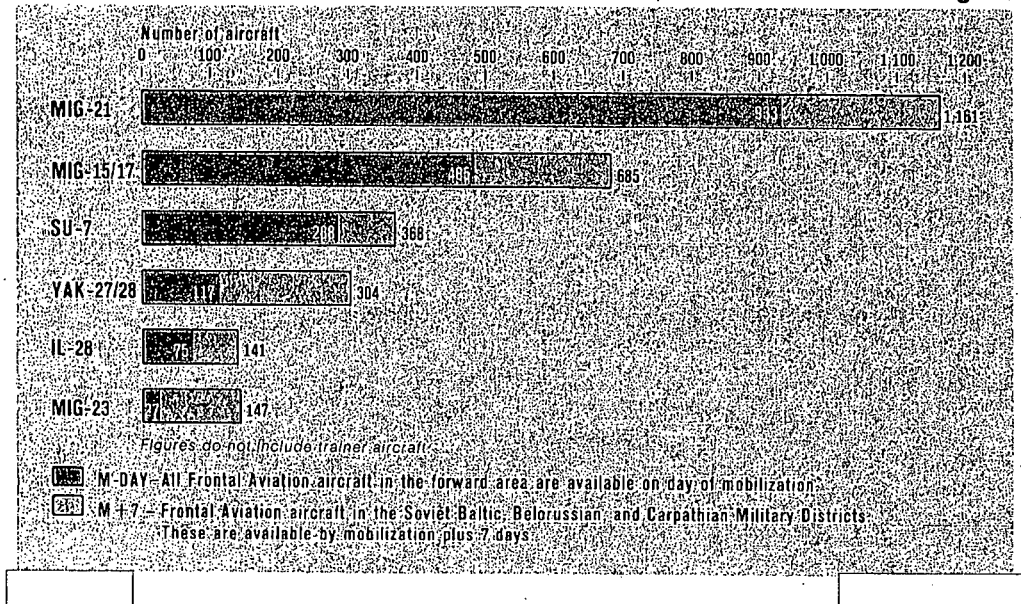
-- The YAK-28 Brewer supersonic light bomber appears to have been designed mainly as a nuclear delivery system. Although it has some range and speed advantage over the SU-7 when combat loaded, the payload is no greater. The Brewer probably would participate little, if at all, in conventional air attacks but would be used for ECM and reconnaissance support or withheld for possible nuclear contingencies.

The range and payload shortcomings of most Pact aircraft would not be a significant factor during a nuclear war. The equipment of the Pact air forces continues for the most part to reflect earlier nuclear planning and appears to be adequate for this role--in terms of aircraft capabilities and numbers. *(See table on page 8.)* All SU-7 fighter-bombers and IL-28 and YAK-28 light bombers have a nuclear delivery capability.

In addition, Soviet Frontal Aviation air defense units--equipped with later model MIG-21s--also have a nuclear delivery capability and apparently some nuclear delivery responsibility. Newer aircraft which are entering service now or are expected to within the next few years will also have nuclear as well as conventional capabilities. Moreover, in a nuclear war, many of the front's nuclear strikes would be launched by tactical missiles such as the FROG, Scud, and Scaleboard.

The fighter air defense force is the most modern component of Frontal Aviation opposite the Central Region. The bulk of the aircraft are late-model MIG-21 Fishbeds which--when used with an effective GCI (ground-controlled intercept) network such as was encountered in North Vietnam--are effective fighters. All MIG-17 Fresco and MIG-19 Farmer aircraft in Soviet air defense units in the western USSR have been replaced by more modern aircraft. In the forward area only Polish Frontal Aviation retains some MIG-17 aircraft in its air defense inventory. The

Frontal Aviation Aircraft Available for Operations in the NATO Central Region



Soviet and Czechoslovak fighter regiments have been completely equipped with MIG-21s--including a large number of the Fishbed J--and Soviet regiments in East Germany and Poland have recently received MIG-23 Flogger aircraft. *(Characteristics are shown on pages 18-19.)*

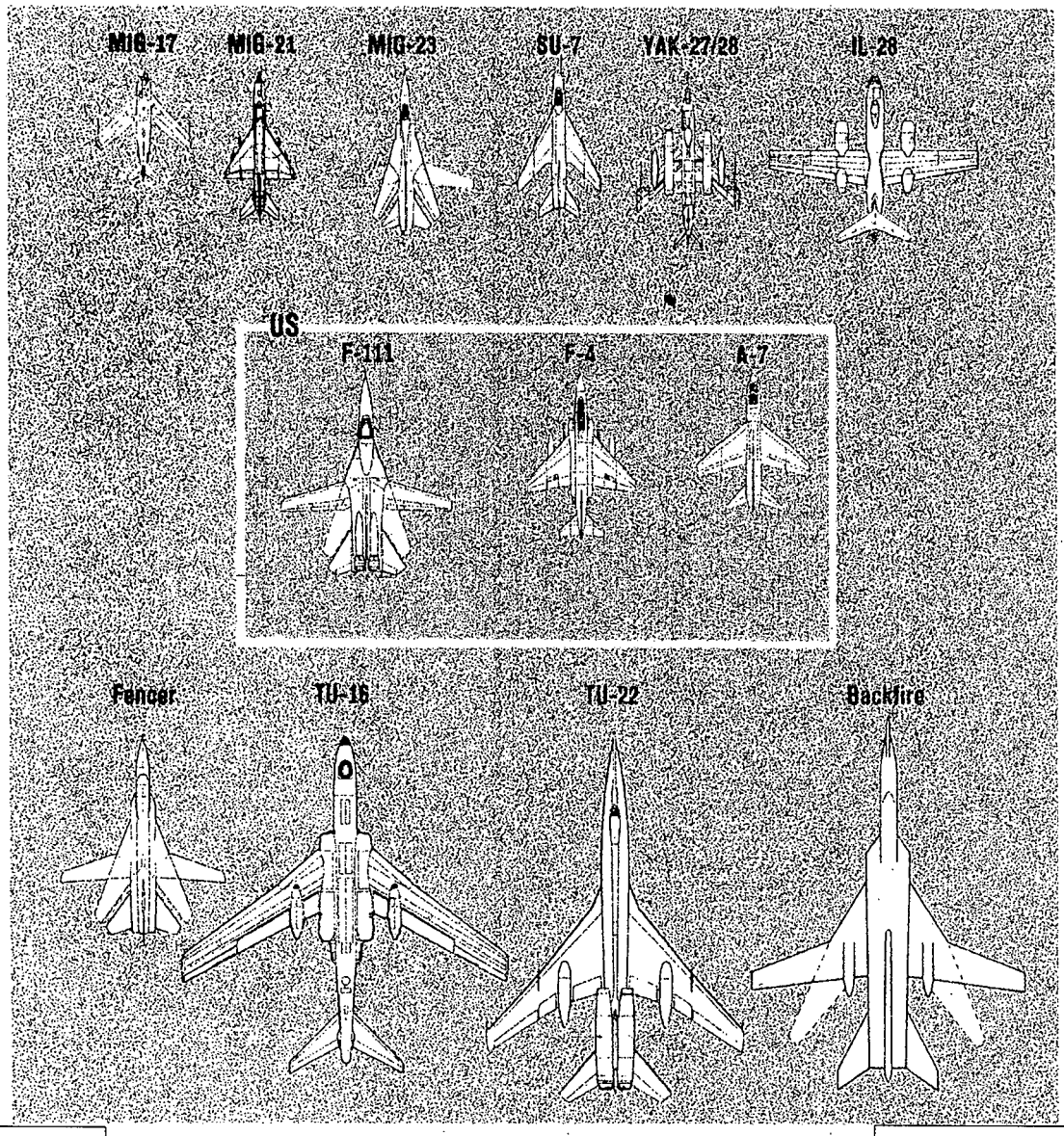
Soviet Medium Bombers

Mission. The medium bombers of Long Range Aviation have the mission of striking targets beyond the range of tactical aircraft and nuclear missiles subordinate to the fronts. Under nuclear war conditions the bombers would complement the MRBM/IRBM force, which would deliver the bulk of the strikes as part of an initial nuclear attack. But in a conventional war the medium bombers would be the primary striking force available to Pact planners for attacks on deeper targets and area targets throughout the theater. During the first several days at least, they would be used for conventional attacks on NATO airfields, nuclear weapons storage sites, command and control centers, and troop and supply concentrations. If the conventional phase lasted more than a few days, the medium bombers would also be used to attack NATO reserves, concentration areas, off-loading points, and other targets in support of frontal operations.

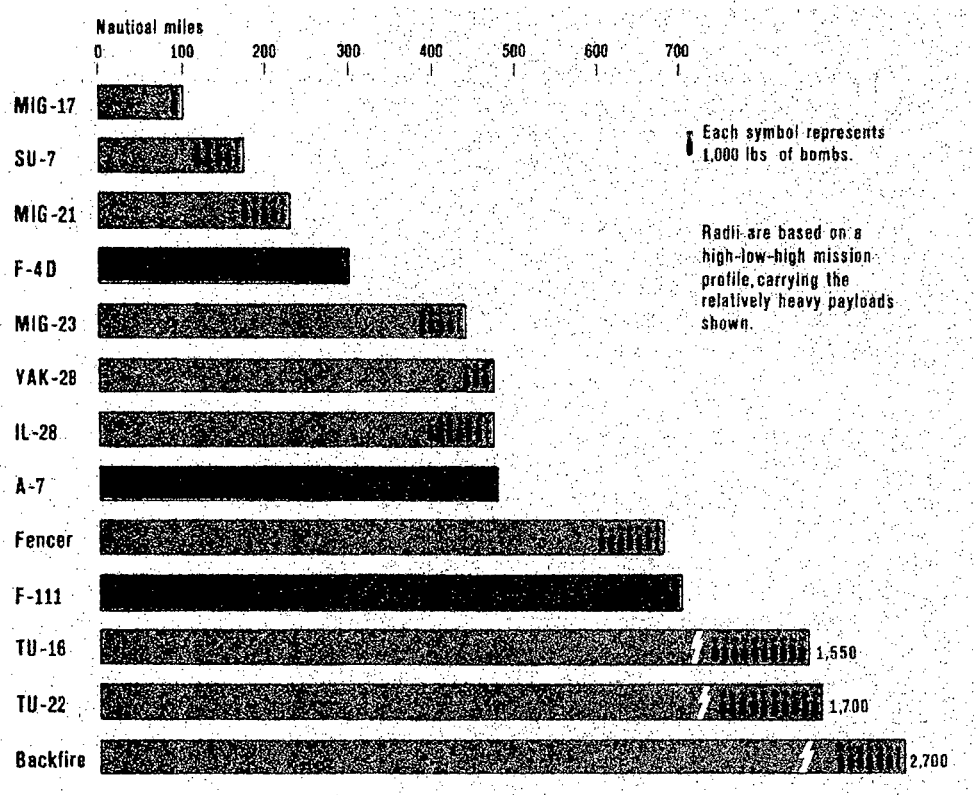
Organization. There are some 550 medium bombers in the western USSR subordinate to the Northwest and Southwest Bomber Commands. These commands are operationally subordinate to Long Range Aviation headquarters in Moscow. Although they might carry out wartime missions in support of the various fronts, control of the bombers probably would be retained by LRA headquarters or by a similar high-level headquarters which might be formed to control operations in the European theater.

Aircraft Capabilities. The medium bomber force in the two western commands consists of about 375 subsonic TU-16 Badgers and 175 TU-22 Blinders which are capable of supersonic dash speeds. About 30 of these

US and Warsaw Pact Aircraft – Comparative Sizes



Radius and Payload Capabilities



Type	Operational since	
MIG-17 Fresco	1953	Most numerous Pact fighter-bomber. Obsolescent, with very light payload and short range. No nuclear capability.
MIG-21 Fishbed	1960-1971 *(various models)*	Primarily a fighter but later models—J and K—have good ground attack and nuclear delivery capability.
MIG-23 Flogger	1970	Dual-purpose swing-wing aircraft being deployed to ground attack and fighter regiments. Improved low-altitude intercept and ground attack capabilities.
SU-7 Fitter	1959	Most modern widely deployed Pact fighter-bomber. Relatively poor range and payload capabilities. Poor low-altitude handling capabilities.
IL-28 Beagle	1950	Obsolescent light bomber. Best range and payload capabilities of currently deployed Pact tactical aircraft.
YAK-27/28 Brewer	1962	Supersonic light bomber-reconnaissance-ECM aircraft. Designed for nuclear delivery; in conventional war most would be used for reconnaissance and ECM or withheld for nuclear contingencies.
TU-16 Badger	1954	Subsonic medium bomber. Poor low-altitude performance. Would provide the main striking force during conventional war through mid-Seventies.
TU-22 Blinder	1962	Medium bomber capable of supersonic dash. Most are not configured for conventional bombing and would be withheld for nuclear contingencies.
Fencer	1974 (est)	Large swing-wing fighter-bomber comparable in range and payload to F-111. Could become primary theater strike aircraft in late Seventies.
Backfire	1974 (est)	Swing-wing supersonic medium bomber with improved low-altitude capabilities. May share theater strike role with Fencer in late Seventies.

aircraft are configured for reconnaissance missions, and 75 Blinders are equipped exclusively for delivery of air-to-surface missiles. The Blinder missile carriers probably would be withheld from conventional conflict in readiness to deliver nuclear strikes. Some of the Badgers are also configured for ASM delivery, but because the missiles are carried on wing pylons, and not beneath the fuselage as on the Blinders, they also can be used as free-fall bombers. *(See table on page 9.)*

The medium bombers, used in a conventional role, would provide the Pact with a considerable range-payload combination. Operating from their permanent bases they have sufficient range to deliver to any target in western Europe up to 10,000 pounds of bombs each. Their range would permit the bombers to take indirect routes to most targets. The primary disadvantage is the poor capabilities of these aircraft to operate at the extremely low altitudes which are characteristic of operations against a sophisticated air defense system such as that in the NATO Central Region. At high operating altitudes they are more vulnerable to NATO interceptors and surface-to-air missiles.

National Air Defense Interceptors

The primary mission of the over 700 aircraft of the East German, Polish, and Czechoslovak national air defense interceptor units is defense of the airspace over their respective countries. *(See table on page 8.)* Pact planners expect NATO air forces to launch massive air attacks against Pact air defense installations, command and control centers, troop concentrations, airfields, and lines of communication. The national air defense interceptors would defend these targets as well as Pact ground forces operating on Pact territory. Unlike Frontal Aviation aircraft, they are not expected to operate to any significant degree over NATO territory.

Recent evidence concerning Pact air force planning indicates that the national air defense interceptors would also be tasked with protecting the LRA bombers overflying Pact territory. Rather than flying close escort for the transiting bombers, the interceptors probably would defend the bombers by attempting to engage any NATO aircraft operating over Pact territory.

Air defense, unlike the ground attack mission, has not been neglected in Soviet nuclear or conventional war planning. More than half the Warsaw Pact aircraft opposite the NATO Central Region--including Frontal Aviation and national air defense forces--have a primary air defense mission, in comparison with less than one-third on the NATO side. The Pact fighters are supplemented by an extensive GCI network and a surface-to-air missile system, in addition to organic ground force air defenses.

Current Offensive Missions of Warsaw Pact Air Forces

The current operational doctrine of the Pact air forces has been strongly influenced by two events. One was the adoption of a "flexible response" doctrine by the US in the early Sixties and by NATO in 1967. The other was the decisive Israeli air attack which initiated the 1967 war in the Middle East, demonstrating the impact that air forces could have on the outcome of a conventional war.

The Soviets' recognition of an implication of the NATO flexible response doctrine--that is, that war with NATO could go on for some time without the use of nuclear weapons--has had a major impact on their views on the role of air forces. Both classified and open Pact writings repeatedly state that, in con-

ventional warfare, air forces are the principal means for destruction of critical targets throughout the theater. And the 1967 Middle East war is cited by Pact strategists as proof that the employment of air forces at the outset of a conventional conflict can be a major factor influencing the outcome.

Under present Pact planning, medium bombers and tactical air units--armed with conventional ordnance--assume responsibility for the primary strike missions at least during the initial stages of a war in the NATO Central Region. About half the 600 targets that were identified as likely candidates for early nuclear attack probably would still be considered critical--and vulnerable enough to offer a reasonable chance for destruction--during the conventional phase. The destruction of the remaining targets, primarily large area targets such as ports and administrative centers, apparently would be deferred for nuclear attack.

Operational Prerequisite:
Attainment of Air Superiority

Pact planners consider the attainment of air superiority to be a prerequisite in a conventional conflict because the Pact is forced to rely on medium bombers as its main striking force against NATO. The greater range and payload capabilities of medium bombers are required to compensate for the range and payload deficiencies of Frontal Aviation aircraft. The bombers are, however, more vulnerable to NATO air defenses than fighter-bombers would be.

Frontal Aviation fighters and fighter-bombers are intended to achieve at least local air superiority, with the object of protecting the medium bombers, by clearing flight corridors through the NATO forward air defense belt and by suppressing activity at those NATO airfields within range. Frontal Aviation fighters would also protect the bombers in the air by taking up blocking positions on either side of the bomber flight paths.

A plan called the "Air Operation" has been developed by the Pact planners to provide the complex coordination required to accomplish the air force objectives. The Air Operation represents a high-risk, maximum effort to achieve air superiority at the outset of a war in the Central Region. It is estimated that all the Frontal Aviation forces in the forward area would be immediately committed to this task and would be reinforced by the air forces of the two second-echelon fronts to be formed in the western USSR. It had previously been estimated that these second-echelon air forces would be withheld from combat until their respective fronts were engaged.

Failure of the plan--and the high losses implicit in such a failure--would reduce the capabilities of the Pact air forces to support the ground force offensive or to defend these forces and their supply lines against NATO air attacks. The early commitment of the aircraft of the second-echelon fronts could, depending on losses, force these fronts to operate with considerably reduced air support in the later stages of the conflict.

Primary Objective:
Destruction of NATO Nuclear
Strike Capability

Most Pact writers have characterized the conventional phase of a war in Europe as temporary, terminating as the retreating NATO forces eventually escalate the conflict to nuclear war. Pact planners estimate that the majority of the NATO nuclear strikes would be delivered by tactical aircraft. The primary objective of the Pact air forces during the conventional phase is to limit NATO's ability to escalate

*For a more detailed description of the Air Operation, see Warsaw Pact Air Power: Concepts for Conventional Air Operations Against NATO, *SR-IR 72-17S, July 1972 (S/NFD - Releasable to UK and Canada).*

the conflict to tactical nuclear war by destroying much of its nuclear-capable air force. Pact planners also reason that the destruction of NATO's tactical air forces would help preserve their own nuclear resources from conventional attack and would reduce the air threat to their advancing tank columns and their supply lines.

Pact planners have also assigned a high priority to the destruction of NATO tactical nuclear missile launchers during the conventional phase. Target acquisition against such launchers is difficult, however, and unlike air forces they would be of little use to NATO during the conventional phase. They are therefore to be attacked initially only as targets of opportunity. An increasing effort to locate and destroy these launchers would be conducted as the number of operational NATO airfields decreased or if nuclear war appeared imminent.

Subsequent Objective:
Support of Ground Forces

In conventional or nuclear war, Frontal Aviation is intended to provide close air support, reconnaissance, and battlefield air defense. Frontal Aviation aircraft would also attack NATO troop and supply concentrations beyond the range of the artillery. The requirements of the Air Operation would take precedence over the air support needs of the fronts, however. Only about one-third of the Frontal Aviation sorties would be in direct support of front operations while the Air Operation was in progress.

Deficiencies for Objectives and Missions

Origins of Current Shortcomings

In January 1960, Khrushchev made a major policy speech in which he outlined a radical shift in military doctrine. The new doctrine called for significant force reductions and alterations in the structure and posture of the Soviet ground and air forces, ostensibly to reconfigure them for nuclear war. Khrushchev's primary goal, however, was to cut expenditures on these forces to help finance efforts to achieve a credible nuclear deterrent based upon the newly created Strategic Rocket Forces. In any case, his speech served notice of a decrease in Soviet conventional warfare capabilities.

Frontal Aviation was significantly reduced as a whole, and in particular a 70-percent cut in the number of light bombers altered its composition and reduced its range and payload capabilities. In short, Frontal Aviation was reconfigured from the conventional striking force which had evolved from World War II through the Fifties to a less expensive force optimized for a nuclear strike role.

During the early Sixties, Frontal Aviation was modernized but the changes appeared intended primarily to improve air defense rather than ground attack capabilities. No new aircraft were introduced during that period, and the research and development effort--as evidenced by the aircraft which appeared in the later Sixties--was directed toward tactical nuclear delivery and battlefield air defense.

The results of decisions made during this period can still be seen in the organization, weapons, and character of Frontal Aviation. These decisions are responsible for the problems that faced Soviet planners as they began in the mid-Sixties to adapt forces designed for nuclear war to the requirements of conventional contingencies.

Tactical Air Forces

The principal shortcomings of Frontal Aviation involve its capabilities for ground attack missions. Deep strikes against large targets or as part of an interdiction effort require long range and heavy payload capabilities--characteristics lacking in the current aircraft.

The close air support mission does not appear to enjoy a high priority relative to other Frontal Aviation missions. Aircraft available for close support have short loiter times, poor payloads, and unsophisticated ordnance, and, by US standards, are poorly controlled.

When the conventional firepower of the general purpose forces was increased in the mid-Sixties in response to the new doctrine, it was the artillery, not Frontal Aviation, that was expanded. The artillery marshals apparently gained hegemony in this area, where missions and capabilities overlap those of the air forces. The recent appearance of the first Soviet self-propelled field artillery and the lack of any evidence that the Soviets have developed a high-payload aircraft optimized for close air support, such as the US A-10, indicate that the dominance of the artillery continues.

Aerial Refueling. The US has long used aerial refueling to increase payload, range, and loiter times of fighters and fighter-bombers. In Vietnam heavily laden strike aircraft were refueled en route to, and often returning from, their targets. Since the mid-Fifties, all US tactical aircraft have had the capability to refuel in flight either from a large tanker such as a KC-130 or from another fighter configured for the tanker role.

Although the Soviets refuel medium and heavy bombers in flight, no operational Soviet tactical aircraft has this capability. This shortcoming is the more significant because most Soviet ground at-

tack aircraft are station limited--that is, they have few ordnance pylons and no multiple bomb release racks. Hence, when external fuel tanks are carried to extend range, it is at the expense of the ordnance that could be carried on these pylons.

The Soviets have, however, conducted numerous aerial refueling tests involving fighter-type aircraft since late 1970. The test aircraft in the tanker role have not been identified, but the timing of the tests and the identification of the aircraft being refueled as multiplace suggest that the Fencer--a large swing-wing fighter bomber which first flew in early 1970--may have been involved. *(Discussion of employment possibilities for the Fencer begins on page 33.)*

Medium Bombers

The medium bomber force was designed primarily for the delivery of nuclear weapons. These aircraft have significant range and conventional payload capabilities, but their vulnerability has been greatly increased by improvements in NATO air defenses, particularly defenses against high- and medium-altitude targets. Consequently, under the Air Operation plan the Pact is forced to allocate a significant portion of its air strength in attacks to protect the bombers.

Command and Control

In nuclear war planning, the primary theater strike force available to the Pact high command consisted of missiles and, to a lesser extent, nuclear-armed medium bombers. Frontal Aviation was regarded as the equivalent of long-range artillery for the ground force fronts and was directly subordinate to the front commanders. In conventional war planning, the air forces are the primary strike force, and there is a requirement for close cooperation between the air forces under the Air Operation. The dis-

persed control of Frontal Aviation and Long Range Aviation, however, has limited the flexibility of these forces for use as a single theater strike force responsive to the high command.

Near-Term Efforts To Alleviate Shortcomings

Shortcomings in the conventional capabilities of Pact air forces are for the most part equipment associated and require that new ordnance and aircraft be introduced in significant numbers, primarily in the ground attack units. Because of time and expenditure requirements, this is not a near-term solution. The long lead times required for developing and introducing new weapons systems serve to delay the impact of the new doctrine on the equipment of the air forces.

Trend Toward a Multimission Force

The Soviets have recognized the inadequacies of their air forces for conventional war and the fact that it could be many years before new aircraft with improved capabilities are introduced in numbers. As a near-term solution to these problems, they apparently have taken steps directed at improving the ground attack capabilities of the Frontal Aviation forces now primarily oriented toward an air defense role. Evidence of an increased multimission capability for Frontal Aviation regiments has emerged over the past few years. This evidence includes the reequipping of many units with improved variants of existing aircraft, a shift in training emphasis, and an authoritative Soviet published reference.

The third (1968) edition of Marshal V. D. Sokolovskiy's *Military Strategy* referred to a "multipurpose aircraft capable of performing the roles of

bomber, fighter, and reconnaissance aircraft." This description fits the later model MIG-21s--the Fishbed H, J, and K--which, although not as effective as the adaptations of the US F-4 to these roles, certainly have greater multimission capabilities than any previous Soviet aircraft. The MIG-23, which is entering service with both fighter and fighter-bomber units, has improved multimission capabilities over those of the MIG-21 but is still inferior to the F-4 at least in the ground attack role.

The increased multimission capabilities of the fighters currently being deployed--the Fishbed H, J, and K, and the MIG-23--could eventually reduce the numbers of Frontal Aviation aircraft required, since they could be used for both ground attack and air defense missions.

Frontal Aviation multimission capabilities may be further enhanced by the introduction of a new, more flexible navigation-attack radar on the MIG-23. Although suited for reconnaissance, air intercept, and navigation, the new radar appears to offer the greatest improvement in ground attack performance with some terrain avoidance and air-to-ground ranging capabilities. The new radar may be the same as that which has been associated with the Fencer.

The evidence indicates that the Soviets are attempting to overcome ground attack shortcomings in the near term without sacrificing air defense capabilities or increasing the size of the force. It is not clear whether the current multimission emphasis

is a stopgap, pending the availability of significant numbers of aircraft specifically designed for ground attack missions, or reflects a long-term program to develop a more flexible multimission force similar to the US tactical air forces in Europe.

At the same time that the Soviets appear to be emphasizing aircraft with increased multimission capabilities, US air planners are giving greater consideration to the concept of a force comprised of aircraft designed for specialized missions. In current US programs aircraft are being developed specifically for close air support, air superiority, or deep strike missions.

Improved Reconnaissance Capabilities

The Soviets have improved their tactical reconnaissance capabilities over the past several years, replacing older aircraft with newer, more capable models. Current efforts appear directed toward reducing the time required to relay and evaluate tactical intelligence data from reconnaissance aircraft to strike aircraft and providing reconnaissance aircraft with the capability to attack as well as locate targets.

There is only limited evidence that the Soviets are making improvements in the first category.

In any case, the greater speeds of the newer generation reconnaissance aircraft enable them to return to base and deliver intelligence on a more timely basis.

The Fishbed H, in addition to carrying much more extensive and varied reconnaissance equipment than the MIG-17 it replaced, has improved reconnaissance-

strike capabilities. These aircraft probably are intended primarily to locate and attack NATO missile launchers before they can move or launch their missiles.

The Fishbed H could signal the first step toward the development of target-of-opportunity tactics in Pact reconnaissance. A reconnaissance version of a new swing-wing fighter-bomber, the Fencer, probably will be introduced in the mid-Seventies. With its two-man crew and heavier payload, the Fencer would improve visual reconnaissance capabilities and allow a greater variety of sensors and weapons to be carried.

Consolidation of Command and Control

The ascent of the Pact air forces to the position of the main striking force under conventional war planning apparently has necessitated certain changes to consolidate the command and control of these forces. These changes may appear to contradict the long-standing Soviet practice of making tactical air forces directly responsible to the user, but this is not the case. Under the Air Operation plan, the tactical air forces have a theater-wide mission and hence command probably would be assumed by a headquarters higher than the front command.

[redacted] the concept of a high-echelon headquarters, similar to a US joint command, has at least been tested for the control of all forces within a particular geographic area. The Soviets refer to such a command as a Theater of Military Operations *(Teatr voyennykh deystviy, TVD)* headquarters. [redacted]

Dispersal Airfields and Conventional War Requirements

During a nuclear war in Europe tactical air forces on both sides would be targets for an initial nuclear attack. To preserve its Frontal Aviation aircraft from nuclear attack, the Warsaw Pact built numerous dispersal airfields including widened strips of highway and natural-surface airfields. Pact planning called for aircraft to deploy to these fields during the period of tension which the Soviets believe would probably precede the outbreak of hostilities.

Reports indicate that operations from dispersal fields--particularly natural-surface fields--complicate maintenance and ground support and reduce the capability to achieve and sustain high sortie rates. During conventional war, Pact aircraft need to maintain high sortie rates to offset their low payload capacities relative to those of NATO aircraft.

The greater vulnerability of aircraft at dispersal fields--which have no aircraft shelters--is another factor limiting their utility. Moreover, the original reason for dispersal--the almost certain nuclear destruction of aircraft at permanent bases--would be reversed during the conventional phase; aircraft would be much safer at permanent fields where shelters provide protection from conventional attack and where air defenses are concentrated. The extensive shelter construction program at Frontal Aviation permanent bases in Eastern Europe and the western USSR since 1967 indicates that the Soviets appreciate the value of shelters in conventional warfare.

Continued Pact training and the lack of shelters in the forward area for aircraft reinforcements from the western USSR indicate that hard-surface dispersal

fields still play an important part in Pact contingency planning. These fields are likely to be used, particularly in East Germany and western Czechoslovakia, to rearm and refuel or to extend range. In this case, Soviet units could be based at fields in Poland and eastern Czechoslovakia and still participate in combat operations. Dispersal fields probably would also be utilized extensively when nuclear war appeared imminent.

Long-Term Efforts to Improve Conventional Capabilities

The steps taken to improve the overall conventional capabilities of the Pact air forces have been directed primarily to adapting the present force to the requirements of conventional war in the near term. But the Soviets apparently recognized the inadequacy of their air forces for conventional war in the mid-Sixties and at that time began to develop new air weapons. Some of these new weapons are now entering initial production and operational service and others probably will enter production within a year or so.

Fencer

The Fencer was developed to meet the requirement for a less vulnerable and more versatile strike aircraft, similar in performance characteristics to the heavier US fighter-bombers. It appears to be the first modern Soviet aircraft to be developed from the outset primarily as a fighter-bomber. From the standpoint of conventional war capabilities, the Fencer probably is the most significant Soviet aircraft presently entering the force or under development. In addition, it represents a significant improvement over current Soviet aircraft in a nuclear strike role. Its design suggests that it is primarily intended to accomp-

lish the deep strike and interdiction missions characteristic of US fighter-bomber operations and beyond the capabilities of current Soviet fighter-bombers.

The Fencer is in production and expected to enter operational service in early 1974. Its introduction into units will provide evidence of the mission responsibilities of Soviet air forces in the late Seventies. At present, it is not clear where the responsibility for the deeper, heavier payload missions called for by conventional war planning will lie. This theater strike mission is now shared by Frontal Aviation and the LRA medium bombers.

It is doubtful that Fencers in Frontal Aviation units would be committed to the close air support role. This role would not require an aircraft with the performance capabilites--and cost--of the Fencer. There appears to be a greater requirement for these capabilities in other roles such as strike missions and suppression of air defenses with tactical air-to-surface missiles. The deployment of a large number of Fencer aircraft to Frontal Aviation probably would signal an expansion of Frontal Aviation responsibilities to include more of the deeper, heavier payload missions now largely assumed by the LRA.

Some Fencer aircraft could be assigned to the LRA--much as some of the US F-111s have been assigned to SAC--to perform many of the theater conventional and nuclear strikes now assigned to the obsolescent TU-16 medium bomber force. The Fencer's capabilities would seem to make it compatible with the missions that have been associated with the medium bomber forces for the past decade.

A third possible deployment option for the Fencer would be its assignment to a new force similar to the Soviet attack aviation of World War II. This force would be directly subordinate to the theater, or theater air commander for use in many of the same bombing tasks that have been allocated to Frontal Aviation and LRA under the Air Operation plan. There is no

evidence that such a force is intended, but the concept of a theater air command has been tested.

Because the Fencer range is less than that of the medium bombers the Soviets probably would prefer to base Fencer units in the forward area during peacetime. If this were the case, those units probably would at least be in the Frontal Aviation administrative structure since this structure and its support system are already established in the forward area. This would not, however, preclude operational control by a theater-level headquarters or even LRA commanders.

The combination of improved capabilities and increased expense probably will limit the number of Fencer aircraft to be introduced. With the increased payload, greater range, and improved penetration and survivability, fewer aircraft will be required to offset the capabilities of those replaced. The Fencer's greater cost--estimated at approximately five times that of the SU-7 and slightly more than that of the TU-16--probably will also limit the number deployed.

Backfire

The Backfire medium bomber also appears suited for the types of war--conventional or nuclear--that the Soviets envision in Europe. The current requirement to destroy rather than avoid NATO air defenses during the conventional phase is forced on Pact planners by the limited low-altitude capabilities of the TU-16 and TU-22 bombers. The Backfire has greater speed and improved low-level handling, which could better enable it to avoid NATO forward radars and air defenses by flying at very low altitudes through heavily defended areas.

The Backfire has no conventional payload advantage over the TU-16s or TU-22s currently intended for conventional bombing. Presumably the same number of aircraft--with a reduced attrition factor--would be

required to attack the targets now assigned the older bombers.

According to current estimates, the Soviets will produce over 200 Backfires by 1980. Some of these probably would be assigned to the Soviet Navy, however, and a number of those allocated to the LRA probably would be withheld from conventional missions to fulfill the nuclear readiness requirement. Rather than assuming the primary conventional bombing role, the Backfire could be used in the mid-to-late Seventies to complement the older bombers, attacking targets beyond the range of the Frontal Aviation air defense suppression activity. But by the early Eighties, the Backfire and Fencer probably will provide the bulk of the Pact's conventional bombing capability.

The Backfire and Fencer are expensive systems, however, and the Soviets may decide to effect some tradeoff in their procurement, particularly in light of what appears to be some overlap in their capabilities and missions as well as economic competition from other systems. In the theater strike role, the Fencer appears to offer greater flexibility than the Backfire. Moreover, because the Fencer is less expensive, the Soviets could produce it in larger numbers for the same cost. Both aircraft will probably assume portions of the theater strike role of the current medium bomber force, however, with the Backfire required for the longer range, heavier payload missions.

None of the Soviet aircraft now beginning production or entering the force with Pact units appears to have a primary close air support mission (except for the SU-17, which does not appear headed for widespread use). Under present planning, the close air support mission is assigned a rather low priority. The Soviets are, however, flight testing an aircraft--

which appears to be readily adaptable to the close support mission.

is a Yakovlev-designed vertical-takeoff-and-landing jet fighter which has been undergoing flight testing since mid-1971. There is no evidence as to the aircraft's performance but it is about the same size as the US-British Harrier and probably will have similar capabilities. If so, it would compare favorably with the Pact's MIG-17 and SU-7 fighter-bombers and, in addition, will have the reduced vulnerability and faster reaction time of a VTOL aircraft.

The Soviets certainly are well aware of the publicity that attack helicopters configured for antitank missions have received in the West. They may see a maneuverable, slow-flying aircraft such as patrolling ahead of tank columns and clearing possible helicopter ambush sites--as one answer to the problem of the antitank helicopter.

Although appears suited for the close air support role, economic considerations rather than battlefield requirements could play the dominant role in determining whether, and in what numbers, is deployed to Frontal Aviation. Two high-priority expensive equipment programs--the Fencer and MIG-23 Flogger--are already under way. Both will compete with for funds and will replace another aircraft which could in turn be assigned to the close air support role.

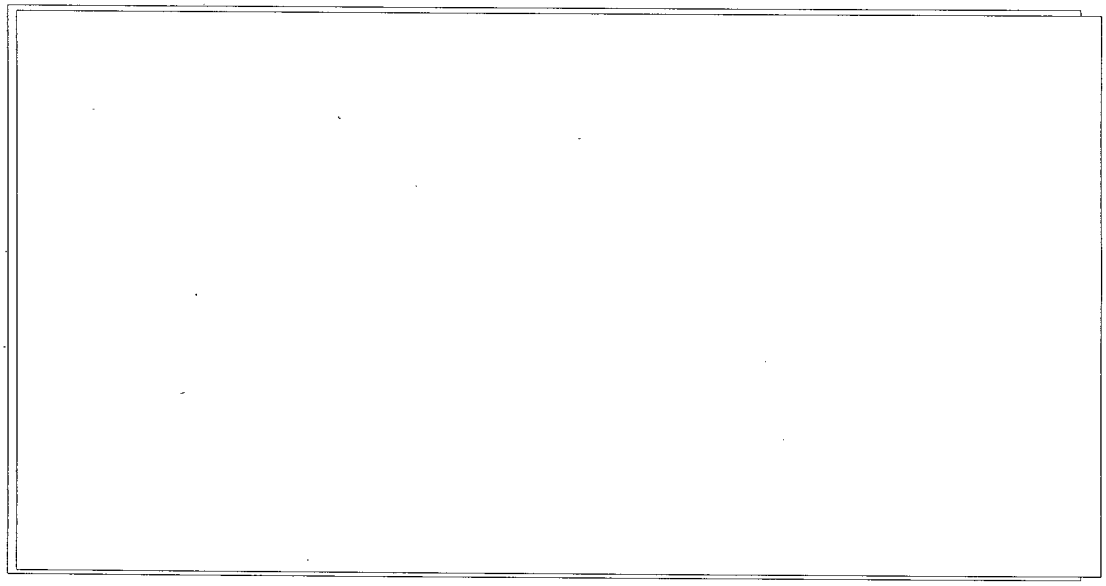
Thus far, is the leading candidate for a naval role, probably similar to the "sea control" concept under consideration in the US and UK navies for shipborne air defense, reconnaissance, and attack. But use of by the Soviet Navy would not preclude its deployment to Frontal Aviation, as well, in the late Seventies.

New Ordnance

In addition to improved aircraft, the Soviets are developing new tactics and more sophisticated ordnance for delivery by aircraft. These weapons--rocket-boosted bombs, precision-guided munitions, cluster bombs, and high-drag munitions--are designed to cope with the requirements to attack air defenses, runways, and sheltered aircraft with conventional means.

Evidence of Fencer weapons testing indicates that a new tactical air-to-surface missile (TASM) has been developed for this aircraft. The missile appears to have a 350-pound warhead and a range of 20 to 30 nm. Similar to the US Shrike, which homes in on radar emissions, it would be intended to attack air defense radars. The Fencer probably can carry two to four of the new missiles.

Another TASM is also being tested with the Fencer. With an inertial, radio, or television guidance package, it could be used to attack hard targets such as aircraft shelters or bridges.



Outlook and Implications

The evidence cited reflects a trend in Soviet Frontal Aviation toward a greater capability to conduct conventional as well as nuclear war missions. The attainment of this capability is dependent on several factors: the availability of new equipment; the numbers in which this new equipment is deployed with the force; increased pilot training; and changes in operational doctrine, including the roles and missions of the various forces. All of these developments would require some difficult economic and political decisions and, once decided on, would take several years to implement.

A nuclear-capable Frontal Aviation force with significantly improved conventional capabilities would have far-reaching effects, particularly for US tactical air doctrine in Europe and for MBFR negotiations. NATO planners would almost certainly have to change current allocation priorities for the tactical air forces if faced with comparably equipped air forces on the other side.

Rather than committing the bulk of the tactical air forces to blunting the Pact ground attack as is presently being advocated by some, NATO planners might be forced at least initially to allocate a greater proportion of the air resources for air defense and counterair efforts to defeat the Pact's effort to achieve air superiority. Present NATO planning holds that massive attacks on Pact air bases probably would not be worth the risks involved. If Pact Frontal Aviation forces had a significantly improved capability to inflict damage on NATO forces, however, this value-risk relationship might have to be reevaluated.

Soviet achievement of tactical air parity would have an effect on MBFR negotiations as well. US "mixed package" options would be reduced inasmuch as trading NATO tactical air capabilities for Pact tanks

would appear less attractive if these trades left NATO with a disadvantage in the air. Some of the current emphasis toward the reduction of the Pact tank forces could be expanded to include the reduction of their tactical air forces as well. Aircraft-for-aircraft options could also become more expensive than would be the case today, if the Soviets believed that their Frontal Aviation aircraft had performance capabilities comparable to those of the US tactical air forces.